

Abstract Submitted  
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**Trapped H<sub>2</sub> in AlH<sub>3</sub>** MARK CONRADI, LASITHA SENADHEERA, ERIK CARL, T.M. IVANCIC, Washington U., Physics, R.C. BOWMAN, JR., JPL, S.J. HWANG, Caltech, Chemical Eng., T.J. UDOVIC, NIST, Gaithersburg — Trapped molecular hydrogen has been discussed for years in H-storage systems such as NaAlH<sub>4</sub>. Here we report proton NMR and neutron vibration spectroscopy (NVS) evidence for H<sub>2</sub> in AlH<sub>3</sub> samples. In static sample NMR, a sharp line appears on top of the broad AlH<sub>3</sub> solid signal. MAS further sharpens this line and identifies it as H<sub>2</sub> by its chemical shift. Upon cooling, the line broadens and disappears near 20K, confirming the H<sub>2</sub> identification. NVS reports energy-gain peaks at the H<sub>2</sub> rotational energy (J=1 to 0).

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